



Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

## DEPARTMENT OF NATURAL RESOURCES

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July 13, 2016

Mr. Bradley Vann, Project Manager  
Superfund Division  
United States Environmental Protection Agency, Region 7  
11201 Renner Boulevard  
Lenexa, KS 66219

**RE: Corrective Action Measures: Inert Gas Injection Work Plan for Hot Spot Remediation**

Dear Mr. Vann:

The Missouri Department of Natural Resources' Federal Facilities Section, in coordination with the Solid Waste Management Program, has completed its review of the document titled: "Corrective Action Measures: Inert Gas Injection Work Plan for Hot Spot Remediation," revision dated May 20, 2016. Thank you for giving us the opportunity to review and comment on the work plan.

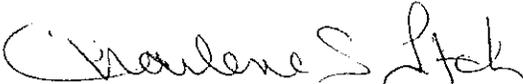
If you have any questions pertaining to these comments, please contact Mr. Seabaugh by phone at (573) 751-8628, or by written correspondence at P.O. Box 176, Jefferson City, MO 65102-0176.

Sincerely,

HAZARDOUS WASTE PROGRAM

  
Ryan Seabaugh, P.E.  
Federal Facilities Section

SOLID WASTE MANAGEMENT PROGRAM

  
Charlene S. Fitch, P.E.  
Chief, Engineering Section

RS:rl

Enclosures: Comments on the Corrective Action Measures: Inert Gas Injection Work Plan for Hot Spot Remediation

c: Mr. Chris Nagel, Director, Solid Waste Management Program ✓



**MISSOURI DEPARTMENT OF NATURAL RESOURCES**  
**Corrective Action Measures**  
**Inert Gas Injection Work Plan for Hot Spot Remediation**  
**Comments**

1. Page 2: "Therefore, inert gas injection technology is not appropriate for large, deep, area-wide reactions nor for conventional landfill fires (or SSOs) deeper than approximately 40 feet."

Comment: What is the decision point for the depth to which this work plan will be implemented, and what will be implemented if an SSO is slightly or significantly deeper than the work plan imposed depth?

Other portions of the work plan suggest that inert gas injection will not be used until other methods of control can be implemented and the SSO is monitored for a period of time. This waiting time may allow the SSO to become widespread and thus inert gas injection may not be effective. Inert gas injection should be implemented within 7 days of identification of a trigger exceedance.

2. Page 2: "The US EPA Administrative Settlement Agreement and Order on Consent for Removal Actions (AOC) incorporates the following trigger values for the implementation of inert gas injection:
  - Landfill gas temperature at the well head greater than 185 °F, or
  - Concentration of carbon monoxide in the landfill gas greater than 1500 ppm, or
  - Temperature in temperature monitoring probe (TMP) greater than 200 °F."

Comment: This bulleted list is inconsistent with the AOC. Please use the exact verbiage from the AOC to avoid obfuscation.

3. Page 3: "These trigger values are not, in and of themselves, sufficient to determine whether an SSO is present in the vicinity of the gas extraction well or TMP where they were recorded. As described below, inert gas injection is not appropriate as an initial remedial action for an SSO. The following protocol will be followed to determine whether an SSO is present. If an SSO is present, the initial remedial measures will be implemented. If the initial remedial measures are not effective, inert gas injection will be implemented.

Comment: The bulleted list should be part of daily physical monitoring, and remedial measures should be taken prior to exceeding the trigger values. The basis for the conclusions drawn in this statement is questionable, and the action steps do not match the intent of implementation of inert gas injection. The administrative order requires inert gas injection to begin within 7 days of the exceedance of the triggers. Please revise the document to be consistent with the order.

4. Page 3: "Upon a trigger exceedance, the area in the vicinity of the well or TMP will be inspected as described in Appendix D of the November 2014 Corrective Action Plan, typical symptoms of an SSO event include..."

Comment: Daily monitoring should include investigation of typical SSO symptoms listed in Appendix D prior to, during, and after a trigger value is reached. The paragraph should be rewritten to say "In addition to the identified triggers, wells and TMPs will be inspected periodically for typical symptoms of an SSO event as described in Appendix A. Additional symptoms may include..."

5. Page 3: "The Bridgeton Landfill, LLC Environmental Manager and the MDNR will actively collaborate..."

Comment: The sentences should include EPA. Please correct any other occurrence of this or similar statements.

6. Page 3: "Such determination will be made within four weeks of the Initial Notifications"

Comment: This response time does not meet the intent of the AOC or utilization of inert gas injection. A seven-day period to confirm both temperature and carbon monoxide levels, i.e., 180° F and 1,500 ppm through laboratory analysis, should allow the facility sufficient time to determine if immediate measures are or are not sufficient to extinguish the SSO. The seven-day evaluation period should also investigate the extent of the North Quarry affected, including the area's proximity to known radiologically impacted material (RIM), with a primary objective of not allowing time for significant expansion of the SSO to occur. Inert gas injection is expected to begin upon determination that an SSO exists or approximately one week from identification of a "hot spot." The work plan also imposes limitations on size of the area to be injected to one gas extraction well, and the depth limit of approximately 40 feet without sufficient data supporting these limitations. Inert gas injection is dependent on adequate volume and uniformity of dispersion at the impacted depth, so the limitations imposed by the work plan need to be supported by sufficient technical information. Please provide sufficient information supporting the limitations.

7. Page 8, First Paragraph:

Comment: References to MDNR should include EPA

8. Appendix A, *Formal Notifications and Classification of the Event*:

Comment: References to DNR should include EPA

9. Appendix A, *Timeline for Local SSO Resolution*:

Comment: Spelling error "form" should be "from"

10. Appendix A, *Things to Avoid*:

Comment: Spelling error “stream” should be “steam”

11. Appendix A, Classification of the Event:

Comment: The last two paragraphs are confusing, and it suggests that classification of the SSO is required prior to action under this work plan. If classification of an SSO moves the necessary action to different approved work plans, then all potentially applicable work plans should be referenced in this document along with the decision points for transfer from one work plan to another.

12. Appendix A, “Appendix D”, first page, Initial Notification and investigation, Section 2

Comment: Please provide a reference to the specific HASP to be utilized.

